

REMARKS

In the Office Action mailed March 22, 2005, claims 18 and 20-23 have been objected to as improperly multiply dependent. Claims 18 and 20-23 have been amended to remove improper multiple dependencies. Withdrawal of the objection to claims 18 and 20-23 is respectfully requested.

The specification has been objected to as lacking section headings. The specification has been amended to include section headings.

The specification has been objected to in that reference number 28 is directed to both the cannula and the foil seal. The specification has been amended at page 11, line 1, to replace the second occurrence of "28" with the numeral "16." Support for this amendment may be found in the specification, for example, at page 10, line 13. Withdrawal of the objections to the specification is respectfully requested.

Claim 1 has been rejected under 35 U.S.C. § 112, second paragraph, as allegedly indefinite and the specification has been objected to for failing to provide antecedent basis for a reservoir being "closed" as stated in claim 1. Specifically, the Examiner has alleged that the outlet member, e.g., a nozzle, has an opening and as such the reservoir is not closed. Applicants respectfully submit that claim 1 is clear and definite and the specification provides sufficient antecedent basis. It is clear from the specification, for example, at page 4, lines 14-19 and page 12, lines 7-8, and from the context of claim 1, that the outlet member is mounted so as to close the opening in the liquid reservoir to the leakage of liquid until a pressure pulse is applied. Withdrawal of the objection to the specification and the rejection of claim 1 is respectfully requested.

In the interest of advancing prosecution, claims 17 and 19 have been cancelled without prejudice.

Claims 1-4, 17 and 19 have been rejected under 35 U.S.C. § 102(e) as allegedly anticipated by U.S. Patent No. 6,783,732 to Madden et al. ("Madden et al."). The Examiner has alleged that Madden et al. teach a device comprising a plurality of reservoirs with outlets.

Applicants respectfully submit that Madden et al. fail to teach a cassette as claimed in claims 1-4 comprising an outlet member mounted so as to close an opening in the liquid reservoir.

Madden et al. fail to disclose an outlet member that closes the opening in a liquid reservoir to the leakage of liquid. Rather, the drip director in the apparatus is configured to expose the lower end of the liquid reservoir to free space, as disclosed by Madden et al. at Col. 17, lines 15-22:

Beneath the filter element 8a, the inner surface of the convergent sidewalls 16b of drip director 16 define a cavity. The cavity is configured to expose the great majority of the filter element's lower surface to open, or free, space. By providing such free space below the filter element 8a (i.e., volume between the drip directors convergent sidewalls 16b and the lower surface of the filter element), preferential flow pathways are avoided.

The drip directors in the apparatus of Madden et al. are configured "to facilitate elution of a mobile phase from the well by funneling it toward a lower opening." Madden et al. at Col. 16, lines 21-23. Further, Madden et al. disclose at Col. 24, lines 57-64, that:

The region of each drip director 16 proximate its outlet may be shaped, e.g., angled or chamfered about its lower circumference, to promote the localization of any pendent drops of filtrate to certain regions of the drip director 16 and to optimize contact between such regions with the inner sidewall of a corresponding collection well 26 during touch off.

Clearly, the drip director does not close an opening in the liquid reservoir, but rather provides a cavity that may be angled at its lower circumference to encourage a laminar and downward flow of liquid and reduce cross-contamination between wells of the apparatus.

Accordingly, Madden et al. fail to teach each element of claims 1-4. Withdrawal of the rejection of claims 1-4, 17 and 19 under 35 U.S.C. § 102(e) is respectfully requested.

Claims 1-4 and 17 have been rejected under 35 U.S.C. § 102(e) as allegedly anticipated by U.S. Patent No. 5,846,493 to Bankier et al. ("Bankier et al."). The Examiner has alleged that Bankier et al. disclose a system having a set of columns in which each column has a reservoir and a tapered nozzle with an opening protruding from one end.

Bankier et al. fail to teach a cassette comprising a plurality of cartridges in which each cartridge has an outlet member mounted so as to close an opening in a liquid reservoir.

Bankier et al. disclose filtration system having a plurality of columns that receive solutions through an inlet end of each and dispense solutions through an outlet end of each. Bankier et al. at Col. 1, lines 47-55. Bankier et al. do not teach an outlet member mounted so as to close an opening in the liquid reservoir, as claimed herein. Rather, Bankier et al. teach at Col. 5, lines 6-67 that:

The columns 10 have an exterior tapering outer wall with a molded piece integrally formed between two adjacent walls of the columns 10 such that the set 50 of the columns 10 results in a substantially rectangular shape, and the columns 10 are maintained in a substantially vertical orientation between a top end with the openings 12 and the openings 44 at the tips 42.

Thus Bankier et al. teach columns that are of a substantially rectangular shape from the opening at the top to the opening at the bottom, and do not teach a cassette of cartridges in which each cartridge has a liquid reservoir and an outlet member mounted so as to close an opening in the liquid reservoir. Bankier et al. thus fail to anticipate the present invention, and withdrawal of the rejection of claims 1-4 and 17 under 35 U.S.C. § 102(e) is respectfully requested.

Claims 1-4, 17 and 18 have been rejected under 35 U.S.C. § 102(b) as allegedly anticipated by U.S. Patent No. 5,035,866 to Wannlund ("Wannlund"). The Examiner has alleged that Wannlund teaches an apparatus having reaction wells including at least two reaction cups arranged one above the other, and that the uppermost reaction cups have orifices in the bottom. The Examiner has further alleged that each reaction cup has an open top and sides that taper inwardly from the top to the bottom of the cup, and that the upper cup has an orifice closed by a removable plug.

Wannlund does not disclose an outlet member mounted so as to close an opening in the liquid member and providing an outlet port through which liquid can be forced by a pulse of pressurized gas. The upper reaction cup in the device of Wannlund has an orifice in the bottom that allows liquid to flow through to the bottom reaction cup. The orifice in the upper reaction cup may be closed by a removable plug, but the plug does not provide an outlet port as claimed herein. Further, Wannlund does not have an outlet port comprising a protruding nozzle, as

claimed in claim 4. The upper reaction cup in the apparatus of Wannlund is tapered simply to allow it to be nested within the lower cup. See, Wannlund at Col. 8, lines 18-20. Accordingly, Wannlund does not teach every element of claims 1-4, and withdrawal of the rejection under 35 U.S.C. § 103(b) is respectfully requested.

Claim 16 has been rejected under 35 U.S.C. § 103(a) as allegedly rendered unpatentable by Madden et al., Wannlund or Bankier et al. The Examiner has alleged that the references do not recite an outlet port comprising an aperture having a diameter between 2 and 300 micrometers, but that it would have been obvious to modify the devices to have an opening in that range in order to precisely control the amount of fluid exiting each reservoir.

Applicants respectfully submit that for all of the reasons discussed herein above, none of the cited references teach a cassette having cartridges comprising a liquid reservoir and an outlet member mounted so as to close an opening in the liquid reservoir. Further, there is no suggestion in the cited references to utilize an aperture having a width of between 2 and 300 micrometers and one of ordinary skill in the art would not have been motivated to make such a modification.

Madden et al. disclose an apparatus for filtration, and thus there would have been no motivation to “precisely control” the amount of fluid exiting each reservoir so as to dispense very small volumes of liquid. To the contrary, in a filtration application, the motivation is to discharge all of the fluid from the filtration well into the collection well, without regard for precise control of the amount of fluid existing the filtration well.

Similarly, Bankier et al. disclose an apparatus for filtration in which a solution is received through the inlet end of a column and dispensed through an outlet end without regard for precise control of the amount of solution dispensed from the column. In the filtration applications disclosed by Bankier et al. and Madden et al., there is simply no reason to precisely control the amount of exiting fluid, and thus no motivation to modify the devices as the Examiner has suggested.

In utilizing the device of Wannlund, there is also no reason to precisely control the amount of fluid exiting from the upper reaction cup. The device of Wannlund is used for the detection of bacteria in a urine sample. The urine sample is added to reactants in the upper reaction cup to release and eliminate non-bacterial ATP in a reaction that requires about 10 to 60


minutes to complete. The treated urine in the upper cup is then released into the lower cup for a reaction in which bacterial ATP is released and reacted with light producing reagents. See Wannlund at Col. 4, lines 26-43. The upper reaction cup has an orifice closed by a removable plug. When the reaction in the upper cup is complete, the plug is ejected so that the urine flows into the lower cup for the second reaction. Thus the purpose of the orifice in the upper cup is to allow the first reaction to proceed to completion before the reaction in the lower cup is commenced. The sequential reactions are necessary to permit removal of non-bacterial ATP prior to the release of bacterial ATP for luminescent detection. There is no reason to precisely control the amount of liquid that flows from the upper reaction cup, and thus there would not have been motivation to modify the device of Wannlund to include an aperture having a width of between 2 and 300 micrometers.

In view of the foregoing comments, withdrawal of the rejection of claim 16 under 35 U.S.C. § 103(a) is requested.

It is respectfully submitted that the present application is in condition for allowance. Favorable consideration and allowance of all pending claims is earnestly solicited.

Respectfully submitted,  
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